

## Claims

1. A method of decoding a symbol sequence in a received DS-CDMA signal, comprising iterative calculation of a hard-decision vector, using a decision threshold having a value based on the probability of each ternary alphabet element of each symbol in the hard-decision vector.  
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2. A method according to claim 1, comprising the steps of:
  - demodulating (301) the received signal, thereby providing a symbol sequence,
  - calculating (302) a matrix product of the symbol sequence and the Hadamard decoding matrix,
  - 10 - calculating (303) an estimate of a decision threshold, assuming equal probability of the ternary alphabet element of each symbol in the symbol sequence,
  - calculating (304) a hard-decision vector using the calculated decision threshold,
  - calculating (305) an estimate of the probability of each ternary alphabet  
15 element of each symbol in the hard-decision vector,
  - calculating (306) a decision threshold using the estimate of the probability of each ternary alphabet element of each symbol in the hard-decision vector,
  - iterating (307) the steps of calculating a hard-decision vector, calculating an estimate of the probability of each ternary alphabet element of each symbol in the  
20 hard-decision vector and calculating a decision threshold using the estimate of the probability of each ternary alphabet element of each symbol in the hard-decision vector, until the calculation of a decision threshold converges or the number of iterations reaches a predetermined maximum number of iterations.
- 25 3. A method according to claim 2, wherein the symbol sequence is a sequence of acquisition indicators (AI) in an acquisition indicator channel (AICH) and further comprises the step of:

- selecting (308) the AI of interest from the calculated hard-decision vector using a predetermined index.

4. User equipment (101,200) capable of decoding a symbol sequence in a received DS-CDMA signal, comprising means (203,205,207,209,211) for iterative calculation of a hard-decision vector, using a decision threshold having a value based on the probability of each ternary alphabet element of each symbol in the hard-decision vector.

5. User equipment (101, 200) according to claim 4, comprising means (203, 205, 207, 209, 211) for:

- demodulating the received signal, thereby providing a symbol sequence,
- calculating a matrix product of the symbol sequence and the Hadamard decoding matrix,
- calculating an estimate of a decision threshold, assuming equal probability of the ternary alphabet element of each symbol in the symbol sequence,
- calculating a hard-decision vector using the calculated decision threshold,
- calculating an estimate of the probability of each ternary alphabet element of each symbol in the hard-decision vector,
- calculating a decision threshold using the estimate of the probability of each ternary alphabet element of each symbol in the hard-decision vector,
- iterating the steps of calculating a hard-decision vector, calculating an estimate of the probability of each ternary alphabet element of each symbol in the hard-decision vector and calculating a decision threshold using the estimate of the probability of each ternary alphabet element of each symbol in the hard-decision vector, until the calculation of a decision threshold converges or the number of iterations reaches a predetermined maximum number of iterations.

6. User equipment according to claim 5, where the symbol sequence is a sequence of acquisition indicators (AI) in an acquisition indicator channel (AICH) and further comprises:

- means (209) for selecting the AI of interest from the calculated hard decision vector using a predetermined index.